CLAIMS:

1. A thermal physical vapor deposition source for depositing material onto a substrate, comprising:

a) an elongated container for receiving the material, the container having a conductance C_B in the elongated direction;

b) a heater for heating the material in the container to vaporize the material to a partial pressure P_m;

c) the container having at least one member defining a plurality of apertures arranged along the length of the member, the apertures having a total conductance C_A, wherein $\frac{C_A}{C_B} \leq 0.5$; and

d) end heating means for heating each side of the container to reduce condensation of material onto the container.

2. The source of claim 1 wherein the end heating means is conductive and has a resistance and further includes means for applying current therethrough.

3. The source of claim 2 wherein the current applying means is adjustable.

4. The source of claim 1 wherein the end heating means includes separate heating elements disposed adjacent to each end of the container.

5. The source of claim 1 wherein the container includes sloped end walls or upwardly sloping bottom surfaces near ends of the container.

6. The source of claim 1 wherein the end heating means includes extensions attached to the heater or an internal baffle such that they enhance heat transfer to ends of the container.

7. The source of claim 1 wherein the end heating means is applied externally at ends of the container.

8. The source of claim 1 wherein the emission through the apertures is by molecular flow and $P_m \leq 13$ Pa wherein P_m is the partial pressure of vaporized material.

9. The source of claim 1 wherein the emission through the apertures is by viscous or transition flow and $P_m > 13$ Pa, wherein P_m is the partial pressure of vaporized material.

10. The source of claim 1 further including means for providing relative motion between the container and the substrate.

11. The source of claim 1 further including means for introducing an inert gas into the container to decrease $\frac{C_A}{C_B}$.

12. The source of claim 11 wherein the inert gas is argon or nitrogen.

13. The source of claim 1 wherein the material is a phosphorescent material, an electroluminescent material, photoconducting, or luminescent by action of ionizing radiation.

14. A source for thermal physical vapor deposition of material onto a substrate, comprising:

a) an elongated container having walls defining an area for receiving the material, the container having a conductance C_B in the elongated direction wherein the container has a member defining apertures, and further including a baffle between the apertures and the material to prevent vaporized material from passing through the apertures in the member without first engaging the walls of the container;

b) one or more heating elements disposed relative to the walls for heating the material in the container to vaporize the material to a partial pressure P_m;

c) the apertures in the member arranged along the length of the member, the apertures having a total conductance C_A, wherein $\frac{C_A}{C_B} \leq 0.5$; and

e) end heating means for heating the ends of the container to reduce condensation of material onto the container.

15. The source of claim 14 wherein the end heating means is conductive and has a resistance and further includes a means for applying current therethrough.

16. The source of claim 15 wherein the current applying means is adjustable.

17. The source of claim 14 wherein the end heating means includes resistive heaters, external end heating, or extensions attached to internal heaters or baffles or both.

18. The source of claim 14 wherein the end heating means are heating elements shaped so as to preferentially heat the end portions of the container to reduce condensation.

19. The source of claim 14 wherein the container includes sloped end walls or upwardly sloping bottom surfaces near ends of the container.

20. The source of claim 14 wherein the emission through the apertures is by molecular flow and $P_m \leq 13$ Pa, wherein P_m is the partial pressure of vaporized material.

21. The source of claim 14 wherein the emission through the apertures is by viscous or transition flow and $P_m > 13$ Pa, wherein P_m is the partial pressure of vaporized material.

22. The source of claim 14 further including means for providing relative motion between the container and the substrate.

23. The source of claim 14 further including means for introducing an inert gas into the container to decrease $\frac{C_A}{C_B}$.

24. The source of claim 23 wherein the inert gas is argon or nitrogen.

25. The source of claim 14 wherein the material is a phosphorescent material, an electroluminescent material, photoconducting, or luminescent by action of ionizing radiation.

26. A method for coating a large-area substrate, comprising:

a) loading a material to be deposited on a workpiece into an elongated container, the container having a conductance C_B in the elongated direction;

b) heating the material in the container to vaporize the material to a partial pressure P_m;

c) the container defining one or more apertures in an elongated pattern in the elongated direction for emitting the vaporized material through the apertures, the one or more apertures having a conductance C_A, wherein $\frac{C_A}{C_B} \leq 0.5$;

d) heating each end of the container to reduce condensation of material onto the container; and

e) providing relative motion between the substrate and elongated container in a direction substantially perpendicular to the elongated direction.

27. The method according to claim 26 wherein $\frac{C_A}{C_B} \leq 0.1$ over the range of operation.

28. The method according to claim 26 wherein the apertures have varying size, shape or spacing between adjacent apertures, or combinations thereof, selected to provide a substantially uniform efflux of vaporized material along the elongated direction of the container.

29. The method according to claim 26 wherein the method is used to make an OLED.

30. The method according to claim 26 wherein the material received in the container includes doped or undoped organic hole-injecting material, doped or undoped organic hole-transporting material, doped or undoped organic light-emitting material, or doped or undoped organic electron-transporting material.

31. The method according to claim 26 further comprising the step of introducing an inert gas into the container to decrease $\frac{C_A}{C_B}$.

32. The method according to claim 31 wherein the inert gas is argon or nitrogen.

33. The method according to claim 26 wherein the material is a phosphorescent material, an electroluminescent material, photoconducting, or luminescent by action of ionizing radiation.

34. A source for thermal physical vapor deposition of material onto a substrate, comprising:

a) an elongated container defining an enclosure having a crucible having walls and defining an area for receiving the material, the container having a conductance C_B in the elongated direction wherein the container has a member defining apertures, and further including a baffle between the apertures and the material to prevent vaporized material from passing through the apertures in the member without first engaging the walls of the container;

b) one or more heating members disposed relative to the walls of the crucible for heating the material to vaporize the material to a partial pressure Pm;

c) the apertures in the member arranged along the length of the member, the apertures having a total conductance C_A, wherein $\frac{C_A}{C_B} \leq 0.5$; and

d) end heating means for heating the ends of the container and crucible to reduce condensation of material onto the container and crucible.

35. The source of claim 34 wherein the end heating means is conductive and has a resistance and further includes a means for applying current therethrough.

36. The source of claim 35 wherein the current applying means is adjustable.

37. The source of claim 34 wherein the end heating means includes resistive heaters, external end heating, or extensions attached to internal heaters or baffles or both.

38. The source of claim 34 wherein the end heating means for heating the ends of the container are heating elements shaped so as to preferentially heat the end portions of the container to reduce condensation.

39. The source of claim 34 wherein the container includes sloped end walls or upwardly sloping bottom surfaces near ends of the container and crucible.

40. The source of claim 34 wherein the emission through the apertures is by molecular flow and $P_m \leq 13$ Pa, wherein P_m is the partial pressure of vaporized material.

41. The source of claim 34 wherein the emission through the apertures is by viscous or transition flow and $P_m > 13$ Pa, wherein P_m is the partial pressure of vaporized material.

42. The source of claim 34 further including means for providing relative motion between the container and the substrate.

43. The source of claim 34 further including means for introducing an inert gas into the container to decrease $\frac{C_A}{C_B}$.

44. The source of claim 43 wherein the inert gas is argon or nitrogen.

45. The source of claim 34 wherein the material is a phosphorescent material, an electroluminescent material, photoconducting, or luminescent by action of ionizing radiation.